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by Heather Gilmour

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.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E}	use with caution
F	too unreliable to be published
*	significantly different from reference category ($p < 0.05$)

Positive mental health and mental illness

by Heather Gilmour

Abstract
Based on the Health Continuum Short Form administered in the 2012 Canadian Community Health Survey – Mental Health (CCHS-MH), the percentages of Canadians aged 15 or older classified as having flourishing, moderate or languishing mental health were 76.9%, 21.6% and 1.5%, respectively. Compared with estimates for other countries, a higher percentage of Canadians were flourishing. In accordance with the complete mental health model, mental health was also assessed in combination with the presence or absence of mental illness (depression; bipolar disorder; generalized anxiety disorder; alcohol, cannabis or other drug abuse or dependence). An estimated 72.5% of Canadians (19.8 million) were classified as having complete mental health, that is they were flourishing and did not meet the criteria for any of the six past 12-month mental or substance use disorders included in the CCHS-MH. Age, marital status, socio-economic status, spirituality and physical health were associated with complete mental health. Men and women were equally likely to be in complete mental health.

Keywords
Cross-sectional studies, health surveys, mood disorders, quality of life, subjective well-being, substance use disorders

Author
Heather Gilmour (heather.gilmour@statcan.gc.ca) is with the Health Analysis Division at Statistics Canada, Ottawa, Ontario, K1A 0T6.

The World Health Organization defines mental health as "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community."[1] This definition emphasizes that mental health is more than the absence of mental illness. Knowledge about the prevalence and determinants of mental health is important for informing promotion and intervention programs.

This analysis examined the percentages of Canadians aged 15 or older in three mental health categories—flourishing, languishing and moderate mental health—defined by the Mental Health Continuum–Short Form (MHC-SF).[2] In accordance with the complete mental health model,[2] mental health was assessed in combination with the presence or absence of six mental illnesses measured in the 2012 Canadian Community Health Survey–Mental Health (CCHS-MH): depression, bipolar disorder, generalized anxiety disorder, and alcohol, cannabis or other drug abuse or dependence, as measured by the World Mental Health—Composite International Diagnostic Interview 3.0 (see *The data*). To better understand the characteristics of people with the highest level of mental health, prevalence and adjusted odd ratios of complete mental health were examined in relation to socio-demographic and health correlates.

Complete mental health model

Keyes' two continua model[2] identifies mental health and mental illness as separate but correlated axes—one representing the presence or absence of mental health; the other, the presence or absence of mental illness. As measured by the MHC-SF, positive mental health (hereafter referred to as "mental health") is a combination of feeling good about and functioning well in life. The scale

consists of 14 questions (Appendix) that assess emotional well-being and aspects of psychological and social functioning in order to classify respondents' mental health as flourishing (high positive emotions, high positive functioning), languishing (low positive emotions, low positive functioning), or moderate (neither flourishing nor languishing). Studies have found flourishing to be protective against all-cause mortality[3] and suicidal behaviour, and academic impairment among students,[4] and predictive of future depression risk.[5] Improvements in mental health have been associated with lower odds of mental illness.[6]

The absence of mental illness does not imply the presence of mental health, or vice versa.[2,7] The complete mental health model combines mental health (flourishing, languishing, moderate mental health) with the presence or absence of mental illness to classify individuals into one of six states. Complete mental health means both flourishing and being free of mental illness. States other than complete mental health have been associated with limitations in activities of daily living, missed days of work, physical conditions, and greater use of acute health care services and prescription medication.[2,8-11]

The data

Data source

The cross-sectional 2012 Canadian Community Health Survey–Mental Health (CCHS-MH) sample consisted of the household population aged 15 or older in the 10 provinces. The survey excluded residents of reserves and other Aboriginal settlements, full-time members of the Canadian Forces, and the institutionalized population. The response rate was 68.9%, yielding a sample of 25,113, which represented 28.3 million Canadians. Analyses were conducted using SAS 9.1. Survey sampling weights were applied so that the analyses would be representative of the Canadian population. Bootstrap weights were applied using SUDAAN 11.0 to account for the underestimation of standard errors due to the complex survey design.[12]

Definitions

The Mental Health Continuum–Short Form (MHC-SF) is summarized in Appendix A. The three-factor structure of mental well-being found in other populations[7,13-18] was replicated in this Canadian population sample. The internal consistency (Cronbach's alpha) for the three subscales was 0.82, 0.77 and 0.83 for emotional well-being, social well-being and psychological well-being, respectively. Reliability for the total scale was 0.89.

The World Mental Health—Composite International Diagnostic Interview 3.0 (WMH-CIDI)[19] is a standardized instrument for the assessment of mental disorders and conditions according to DSM-IV (*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*) criteria, and is widely used in population surveys.[20,21] Six mental disorders (lifetime and past year) were included in the 2012 CCHS–MH: depression; bipolar disorder; generalized anxiety disorder; alcohol abuse and dependence; cannabis abuse and dependence; and other substance abuse and dependence. Diagnostic algorithms identified respondents meeting the criteria for each disorder. Mental health and mental illness were cross-tabulated to create six categories.

Four age groups were defined: 15 to 24; 25 to 44; 45 to 64; and 65 or older. Age was used continuously in multivariate analysis.

Highest level of household education was grouped into two categories: those who had or had not completed postsecondary education. Income was represented as the ratio of household income to the low-income cut-off [22] and divided into quintiles. Employment status indicated whether respondents had been employed during the two weeks before the interview.

Respondents born outside Canada without Canadian citizenship were identified as immigrants. Those born in Canada, the United States or Greenland who indicated that they were First Nations, Métis, or Inuit were categorized as Aboriginal.

Communities of 1,000 or more with a population density of at least 400 per square kilometre were classified population centres (as opposed to rural areas).

Respondents who answered "very important" or "somewhat important" (versus "not very important" or "not at all important") to the question, "In general, how important are religious or spiritual beliefs in your daily life?" or answered "a lot" or "some" (versus "a little" or "not at all") to the question, "To what extent do your religious or spiritual beliefs give you the strength to face everyday difficulties?" were classified as having strong spirituality.

Physical conditions diagnosed by a health professional and that had lasted or were expected to last six months or more were summed and grouped into 0, 1, 2, or 3 or more chronic conditions. Conditions included were asthma, arthritis, back problems excluding fibromyalgia or arthritis, migraine, chronic bronchitis/emphysema/COPD, diabetes, epilepsy, heart disease, cancer, effects of stroke, bowel disorder/Crohn's disease/colitis, Alzheimer's disease or other dementia, chronic fatigue syndrome, multiple chemical sensitivities, or high blood pressure.

Respondents who indicated they were not usually free of pain or discomfort were considered to have chronic pain and were asked how many activities their pain prevents.

Limitations

Mental disorders were identified by an algorithm based on responses to the CIDI, not a clinical diagnosis. As well, only certain mental disorders were included on the CCHS–MH, and the institutionalized population was excluded which may result in underestimated prevalence. Because the survey is cross-sectional, temporal order cannot be inferred. Data are self-reported and have not been verified by another source.

Majority flourishing

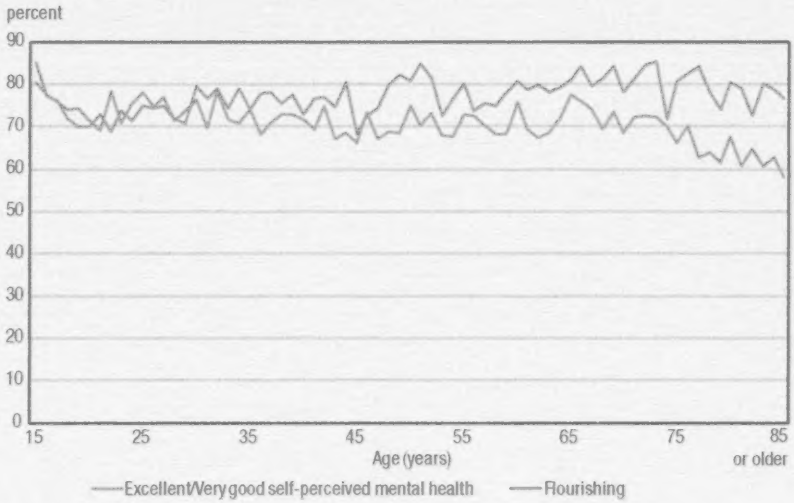
In 2012, the percentages of Canadians classified as having flourishing, moderate or languishing mental health were 76.9%, 21.6% and 1.5%, respectively. The percentage flourishing was higher than in the United States,[4,23-25] the Netherlands,[16] South Africa,[14] France,[17] and Korea,[18] which ranged from 11.7% to 69.1%. However, previous surveys used telephone, postal and internet instruments and population-based and convenience samples, and covered different age ranges, subpopulations, and levels of geography—each of which likely contributed to the range in the prevalence of flourishing. A bias could result if people in poor mental health were less likely to participate in the CCHS-MH. Additionally, if mental health is substantially different in the three territories and among the groups excluded from the CCHS-MH, prevalence estimates could be affected. However, the territories represent 0.3% of the target population,[26] and exclusions, about 3%.[27]

Wide variation across countries in the prevalence of positive well-being was reported in a multi-country study in Europe that used consistent survey methodology.[28] Based on a conceptually similar measure to the MHC-SF, a fourfold difference in the prevalence of "flourishing" was found between the lowest and highest countries (9.3% to 40.6%), which suggests that cultural factors may play a role. In addition, a comparison of the MHC-SF in three countries (the Netherlands, South Africa and Iran)[29] concluded that scale items functioned similarly across cultures; therefore, differences in MHC-SF and its associations with health outcomes were due to differences in the cultural groups, not to differential functioning of the scale.

Self-perceived mental health

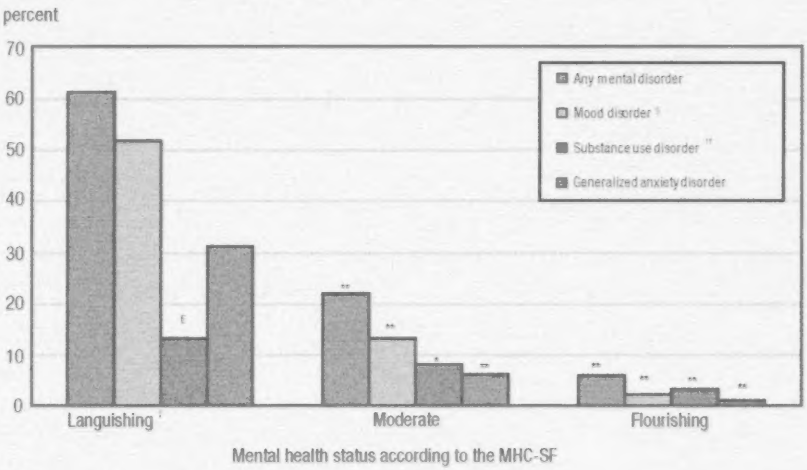
To demonstrate construct validity, the prevalence of flourishing from the CCHS-MH and self-perceived mental health (SPMH) from the annual component of the 2012 CCHS were compared. SPMH is based on the question, "How would you rate your mental health?" Although SPMH is

Figure 1
Percentage reporting excellent or very good self-perceived mental health and prevalence of flourishing mental health, by age, household population aged 15 or older, Canada excluding territories, 2012



Sources: 2012 Canadian Community Health Survey; 2012 Canadian Community Health Survey - Mental Health.

Figure 2
Prevalence of past 12 -month mental disorders,‡ by mental health status, household population aged 15 or older, Canada excluding territories, 2012



† reference group
* significantly different from reference group ($p < 0.05$)
** significantly different from reference group ($p < 0.01$)
‡ as measured by World Mental Health—Composite International Diagnostic Interview 3.0 (WMH-CIDI)
† depression or bipolar disorder
†† alcohol, cannabis or other drug abuse or dependence
E use with caution
Source: 2012 Canadian Community Health Survey - Mental Health.

less comprehensive than the MHC-SF, it might be expected to measure similar constructs. The percentage of Canadians with "excellent" or "very good" SPMH (versus "good," "fair" or "poor") paralleled the percentage with flourishing mental health (Figure 1), although the measures diverged at older ages. This lends credibility to the higher estimate of flourishing reported in the CCHS-MH, compared with other surveys.[4,14,16-18,23,24]

Mental disorder and mental health

In 2012, 10.1% of Canadians aged 15 or older (2.8 million) met the criteria for at least one of the six past 12-month mental or substance use disorders measured by the CCHS-MH. These data are based on self-reported responses to the WMH-CIDI survey instrument (see *The data*) and do not include all possible mental disorders. As expected, an inverse relationship between mental health and mental disorder was apparent (Figure 2).

According to combined assessments of mental health and mental illness,[2,7] in 2012, an estimated 72.5% of Canadians aged 15 or older (19.8 million) were categorized as having complete mental health—they were flourishing and did not meet the criteria for mental disorders (Table 1). This was higher than estimates reported in American studies: 32.7% of adults,[16] 37.9% of adolescents,[23] and 49.3%[4] and 60.7%[24] of college students. In addition to factors previously mentioned (different age groups, subpopulations, survey collection methodologies and cultural factors), differences in measurements of mental disorder may contribute to variations across studies.

Although much less common, flourishing or moderate mental health can occur in the presence of mental illness (4.5% and 4.7%, respectively), and languishing mental health can occur with or without the presence of a mental disorder (0.9% and 0.6%, respectively). In this study, the continuous mental health score was only moderately correlated with any mental disorder (-0.31), mood disorder (-0.31), generalized anxiety disorder (-0.23), or any substance use disorder (-0.13) ($p < 0.01$), which emphasizes that mental health is more than the absence of mental illness.

Who is in complete mental health?

An understanding of the characteristics of people in complete mental health can be useful in informing promotion and intervention programs.[30,31] Analysis of the correlates of complete mental health has been limited, and none has been undertaken for the Canadian population.

In this study, men and women were equally likely to be classified as having complete mental health (Table 2). Results from previous studies have been equivocal. In a study of American adults,[7] the prevalence of complete mental health was higher among men than women, but only for blacks. A study of Dutch adults found that women were more likely than men to have complete mental health.[16] The Dutch study found that that age-related differences in complete mental health were no longer significant in multivariate analysis.[16] By contrast, based on the results of the CCHS-MH, a positive association with age persisted even when socio-demographic and health factors were taken into account. As well, people with a partner were more likely than those who were widowed, separated, divorced or single to be in complete mental health.

Canadians in the lowest household income quintile, without a postsecondary education, and without a job or permanently unable to work were less likely to report complete mental health. In the United States, education was also positively associated with complete mental health.[7] In the Netherlands, mental health was not significantly associated with income, but marital status was associated with complete illness (languishing and mentally ill).[16]

Although relatively high percentages of recent immigrants (0 to 4 years in Canada) and longer-term immigrants (15 or more years) reported complete mental health, the association was not significant in multivariate analysis. Given that immigrants are not a homogeneous group, analysis that incorporates immigrant type and country of origin would be required to disentangle associations between immigrant status and complete mental health.

A bivariate association between Aboriginal status (off reserve) and a lower prevalence of complete mental health did not persist in multivariate analysis. Research based on samples large enough to study First Nations, Métis and Inuit groups separately, and including the population living on reserves, is required to better understand the relationship between Aboriginal status and complete mental health.

People living in urban environments were significantly less likely (72%) than rural residents (77%) to be in complete mental health.

Research has linked religion and spirituality with mental health.[32] In this study, those who reported strong spirituality were significantly more likely (76% versus 66%) to be in complete mental health than were those not classified as having strong spirituality.

Physical health was also associated with mental health. Having one chronic condition or three or more conditions

Table 1
Prevalence of diagnostic categories of Complete Mental Health Model, household population aged 15 or older, Canada excluding territories, 2012

Any past 12-month mental disorder†	Mental health diagnosis		
	Languishing	Moderately mentally healthy	Flourishing
No	Languishing 0.6% (0.5% to 0.7%)	Moderate mental health 16.8% (16.0% to 17.6%)	Complete mental health 72.5% (71.6% to 73.5%)
Yes	Mental illness and languishing 0.9% (0.7% to 1.1%)	Mental illness and moderately mentally healthy 4.7% (4.3% to 5.1%)	Mental illness and flourishing 4.5% (4.1% to 5.0%)

† depression; bipolar disorder; generalized anxiety disorder; alcohol, cannabis or other drug abuse or dependence as measured by World Mental Health—Composite International Diagnostic Interview 3.0 (WMH-CIDI)
Note: 95% confidence intervals in parentheses.
Sources: Adapted from Keyes[7]; 2012 Canadian Community Health Survey - Mental Health.

Table 2
Prevalence and adjusted odds ratios of complete mental health, by selected characteristics, household population ged 15 or older, Canada excluding territories, 2012

	Complete mental health						
		Prevalence			Adjusted odds ratio		
			95 % confidence interval			95 % confidence interval	
Characteristics	Estimated number '000	%	from	to		from	to
Male	9,668	71.9	70.6	73.3	1.0	0.9	1.1
Female†	10,123	73.1	71.8	74.3	...	...	...
Age (used continuosly for logistic regression)					1.01**	1.01	1.02
15 to 24†	2,809	64.6	62.3	66.8	...	...	...
25 to 44	6,415	71.1**	69.3	72.8	...	...	...
45 to 64	6,936	74.4**	72.7	76.1	...	...	...
65 to 74	2,209	79.6**	77.6	81.5	...	...	...
75 or older	1,422	78.3**	76.0	80.5	...	...	...
Marital status							
Partner†	12,521	76.5	75.3	77.7	1.0	...	...
Widowed/Separated/Divorced	2,493	71.5**	69.0	73.9	0.8*	0.7	1.0
Single (never married)	4,744	64.1**	62.3	65.9	0.7**	0.6	0.8
Postsecondary education							
Yes†	14,514	73.7	72.5	74.7	1.0	...	...
No	3,824	69.0**	67.0	70.9	0.9*	0.8	1.0
Income quintile							
Lowest†	3,539	66.3	64.0	68.6	1.0	...	...
Low-middle	3,900	71.5**	69.4	73.5	1.0	0.9	1.2
Middle	3,994	72.4**	70.3	74.4	1.1	0.9	1.3
High-middle	4,131	75.3**	73.4	77.2	1.3**	1.1	1.6
Highest	4,227	76.9**	74.8	79.0	1.3**	1.1	1.6
Employment status							
Has job†	12,941	73.5	72.3	74.7	1.0	...	...
Permanently unable to work	315	47.0**	41.2	53.0	0.5**	0.4	0.7
Does not have job	5,232	71.3*	69.7	72.9	0.9	0.8	1.1
Immigrant (years in Canada)							
0 to 4 years	709	77.1*	72.5	81.0	1.2	0.9	1.6
5 to 9 years	665	75.9	70.1	80.8	1.3	0.9	1.8
10 to 14 years	571	69.6	62.4	76.0	0.9	0.6	1.3
15 or more years	3,236	77.1**	74.4	79.5	1.1	0.9	1.4
Non-immigrant†	14,512	71.4	70.3	72.4	1.0	...	...
Aboriginal status							
Aboriginal	591	64.9**	60.4	69.2	0.9	0.7	1.1
Non-Aboriginal†	19,177	72.8	71.9	73.8	1.0	...	...
Place of residence							
Population centre	16,143	71.6**	70.5	72.7	0.8	0.7	0.9
Rural†	3,647	76.8	74.8	78.6	1.0	...	...
Strong spirituality							
Yes	13,282	76.0**	74.8	77.2	1.6**	1.4	1.8
No†	6,376	66.1	64.4	67.7	1.0	...	...
Chronic conditions							
None†	9,623	74.5	73.1	75.8	1.0	...	...
1	5,146	72.1*	70.2	73.9	0.8**	0.7	0.9
2	2,839	74.9	72.7	76.9	1.0	0.9	1.2
3 or more	2,132	63.8**	61.5	66.1	0.6**	0.5	0.7
Chronic pain							
No pain†	16,345	75.2	74.2	76.2	1.0	...	...
Chronic pain prevents none or a few activites	2,207	66.4**	63.7	69.0	0.6**	0.5	0.7
Chronic pain prevents some or many activities	1,234	55.3**	52.0	58.6	0.4**	0.4	0.5

† reference group
* significantly different from reference group ($p < 0.05$)
** significantly different from reference group ($p < 0.01$)
... not applicable
Note: Complete mental health refers to being classified as flourishing according to MHC-SF and not meeting criteria for any of the six 12-month mental and substance use disorders assessed in CCHS-MH (depression; bipolar disorder; generalized anxiety disorder; alcohol abuse and dependence; cannabis abuse and dependence; and substance abuse and dependence).
Source: 2012 Canadian Community Health Survey - Mental Health.

was associated with a lower likelihood of complete mental health in both bivariate and multivariate analysis; the presence of two chronic conditions was not. The association between chronic pain and complete mental health demonstrated a clear gradient—75% of those without pain were in complete mental health, compared with 66% with pain that prevented none or only a few activities, and 55% with pain that prevented some or most activities. This gradient persisted in multivariate analysis.

Concluding remarks

Estimates of flourishing and complete mental health based on the CCHS are higher than reported in previous studies. Results support Keyes' two continua model, whereby mental health and mental illness are related, but distinct, phenomena. Further study is required to better understand to what extent differences in survey methodology account for variations in the prevalence of flourishing; whether Canadians are actually more likely than other populations to have flourishing mental health; and if so, what socio-demographic or cultural factors may explain this phenomenon. ■

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Appendix

Table A

Questions in Mental Health Continuum Short Form (MHC-SF)

Emotional well-being

How often[†] in the past month did you feel . . .

1. happy
2. interested in life?
3. satisfied with your life?

Positive functioning

How often[†] during the past month did you feel . . .

4. that you had something important to contribute to society? (social contribution)
5. that you belonged to a community (like a social group, your neighbourhood, your city, your school)? (social integration)
6. that our society is becoming a better place for people like you? (social growth)
7. that people are basically good? (social acceptance)
8. that the way our society works makes sense to you? (social coherence)
9. that you liked most parts of your personality? (self-acceptance)
10. good at managing the responsibilities of your daily life? (environmental mastery)
11. that you had warm and trusting relationships with others? (positive relationship with others)
12. that you had experiences that challenged you to grow and become a better person? (personal growth)
13. confident to think or express your own ideas and opinions? (autonomy)
14. that your life has a sense of direction or meaning to it? (purpose in life)

Flourishing requires a response of "almost every day" or "every day" to 1 or more of the 3 emotional well-being questions, and to 6 or more of the 11 positive functioning questions.

Languishing requires a response of "once or twice" or "never" to 1 or more of the 3 emotional well-being questions, and to 6 or more of the 11 positive functioning questions.

Moderate mental health refers to those who are neither flourishing or languishing.

[†] every day, almost every day, about 2 or 3 times a week, about once a week, once or twice, or never

Source: Keyes.[33]